BUSINESS DECISIONS MODELLING IN A MULTI-SCALE MATERIAL SELECTION & DESIGN FRAMEWORK: CASE OF VIPCOAT H2020 PROJECT

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Corrosion is a widely occurring phenomenon in natural and industrial environments and can severely deteriorate the properties of metals during their service lives. This tends to drastically decrease the service life of the structures and induces extensive costs in terms of maintenance. The annual costs of corrosion total roughly €2.5 trillion/year, or 3-4% of global GDP on average [1]. Corrosion professionals must understand the effects of environmental conditions on materials and structures, required lifetime of the structure, and proximity to corrosion-causing phenomena before determining the specific corrosion problem, specifying an effective solution and taking well informed decision [2]. One effective way to manage this complexity while realizing a substantial decrease of costs is to leverage on the use of business process modelling concept and approach to deliver decision-support capability for corrosion protective coating. This paper presents a Business Decision Support System implemented in terms of the BPMN and DMN standards, which provides a unified environment supporting interoperability for modelling the phenomena involved in corrosion and protective coating modelling. The proposed system successfully integrates materials modelling methodologies and knowledge-based systems with business process for decision making. This proposed use of the BPMN and DMN standards provides the missing link between business processes, materials science and engineering workflows in the context of corrosion and protective coating modelling, opening a new horizon in engineering industrial applications. The paper is complemented with an application case, which describes an initial example of successful representation of business process from the material modelling domain that include decision models implemented with DMN in the projective domain

References:

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